

## Non-CO<sub>2</sub> Greenhouse Gases: High-GWP Gases

**Source/Sectors:** Electric Power Transmission and Distribution Systems

**Technology:** Leakage reduction and recovery (C.2.1)

### Description of the Technology:

Leaks from the equipment and venting of the gas during equipment servicing and disposal of equipment are the main sources of emissions. Normal procedures require taking units out of service to search for SF<sub>6</sub> leaks.

A laser leak detection system is capable of finding leaks accurately without any modifications or physical connections to circuit breakers. The advantages over traditional leak detection procedures are the ability to perform leak detection without having to take equipment out of service and the dramatic reduction in time necessary to detect a leak (USEPA, 2001).

**Effectiveness:** This is one of the most effective options to reduce emissions from this sector.

**Implementability:** Technically available to all manufactures of gas insulated electrical equipment (IEA, 2003)

**Reliability:** This is a basic and promising option to effectively abate SF<sub>6</sub> emissions from electric power systems because of its availability, cost performance, and implementability (CEC, 2005; IEA, 2003).

**Maturity:** Well developed technologically and widely practiced (CEC, 2005)

**Environmental Benefits:** High-GWP gas emission reduction. If thoroughly implemented in the United States, leak detection and repair could reduce SF<sub>6</sub> emissions from this sector by about 20% (USEPA, 2004).

### Cost Effectiveness:

Technology	Lifetime (yrs)	MP (%)	RE (%)	TA (%)	Capital cost	Annual cost	Benefits
Leakage reduction and recovery <sup>1</sup>	10	100	100	100	\$10.96	\$1.81	\$0.00

Note: MP: market penetration; RE: reduction efficiency; TA: technical applicability; costs are in year 2000 US\$/MT<sub>CO2-Eq</sub>.

1: USEPA (2001) & CEC (2005); 2: IEA (2003)

**Industry Acceptance Level:** Many U.S. utilities already implement cost-effective leak detection and repair. The GasVue laser camera, a laser leak detection system developed with the support of the Electric Power Research Institute (EPRI) by Laser Imaging Systems of Punta Gorda, Florida, has been successfully used at a wide range of utilities in the United States and abroad (Moore, 1999).

**Limitations:** SF<sub>6</sub>-containing equipment leakage varies on the type of equipment: old/new, size of operational voltage, manufacturer, weather, etc. Therefore, the applicability may be limited on the region or country of use (IEA, 2003).

**Sources of Information:**

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